

ABSTRACT

The invention provides for cooling a semiconductor die. The die has plurality of micro-channels. A condenser is in fluid communication with the micro-channels such that the die heats vaporizes fluid at the die to force fluid towards the condenser, and such that gravity pressurizes cooler condenser fluid towards the die. A semiconductor plate such as glass may couple with the die to seal the micro-channels and to form a plurality of fluid conduits for the fluid. Generally, the fluid is alcohol. A first fluid conduit and a second fluid conduit couple between the die's micro-channels and the condenser to form a closed loop thermosyphon system. The condenser is preferably constructed and arranged above the die such that gravity forces cooler fluid to the micro-channels. The micro-channels may be shaped for preferential fluid flow along one direction of the die. The condenser may contain fins to enhance heat transfer to air adjacent the condenser.